



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,981	09/17/2003	Felix C. Fernandes	TI-35537	8621

23494 7590 12/17/2007
TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

EXAMINER

HUBER, JEREMIAH C

ART UNIT	PAPER NUMBER
----------	--------------

2621

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

12/17/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com
uspto@dlemail.itg.ti.com

Office Action Summary

Application No.

10/666,981

Applicant(s)

FERNANDES, FELIX C.

Examiner

Jeremiah C. Huber

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hu (5748247) in view of Yim (6452969).

In regard to claim 1 Hu discloses a method for motion vector refinement including:

providing a target block a corresponding motion vector estimate and a reference frame (Hu col. 3 line 46 to col. 4 line 5 note motion vector estimates are provided by parent and neighboring child blocks also note col. 1 lines 47 to 61 motion vectors are used with reference frames);

when a boundary of a first reference block located by said motion vector estimate in the reference frame does not align with a boundary of any block in the reference frame,

defining a motion vector search window by adjoining blocks along the boundaries of the first reference block in the reference frame (Hu col. 3 line 46 to col. 4 line 5 note Hu must inherently adjoin blocks along boundaries to perform searches, also note col. 4 lines 5 to 14 the 'search window' can include multiple areas for a candidate vector check);

refine the motion vector estimate by searching over potential motion vectors which locate potential blocks within the search window (Hu col. 4 lines 5 to 14 note vector with lowest DFD is selected);

It is noted that Hu does not disclose details of performing motion vector refinement in the DCT domain. However Yim discloses a method of performing inverse motion compensation in the DCT domain (Yim col. 9 line 17 to col. 14 line 24 for a detailed description of process). Such inverse motion compensation corresponds to the candidate motion vector check disclosed in Hu (Hu col. 4 lines 5-14). It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage of including the inverse motion compensation in the DCT domain technique taught by Yim in the invention of Hu in order to avoid introducing undesirable artifacts as suggested by Yim (Yim col. 3 lines 18-23).

In further regard to claims 1-2 it is noted that the claims state performing either step (b) or step (c), therefore the art need only anticipate either steps (b) or (c) in order to anticipate the claims. Claim 2 is directed entirely to step (c).

In regard to claim 3 refer to the statements made in the rejection of claim 1 above. Yim further discloses the use of macroblocks as 2x2 arrays of 8x8 DCT blocks (Yim col. 5 line 46 to col. 6 line 19). Hu further discloses that the search window lies within a 3x3 array of reference frame blocks (Hu col. 4 lines 5-14 note search windows are the size of the current block).

Response to Arguments

Applicant's arguments filed 9/21/2007 have been fully considered but they are not persuasive.

As an initial matter it is noted that due to an error the previous office action indicated both that claim 2 was rejected, and objected to as an allowable dependant claim. The indication that claim 2 was objected to as allowable was accidentally left in the action from a previous draft, and is thus in error. Based on the applicant's arguments in which the applicant regarded claims 1-3 as rejected the applicant understood the examiner's intention in this matter.

In response to the applicant's arguments made in regard to claims 1-3 the applicant asserts that Hu does not disclose motion vector refinement as claimed but rather discloses refinement with respect to block size, explicitly stating that motion for an 8x8 block is refined by finding motion vectors for 4x4 blocks. The examiner must disagree. Hugh discloses a method of refining motion vectors for a block by obtaining motion vector estimates for the block from its parent block and neighboring blocks (Hu col. 3 line 46 to col. 4 line 5). Also the examiner cannot find in Hu any specific suggestion that blocks are 8x8 and child blocks are 4x4, but rather Hu is directed towards a more generic application to MxN parent blocks. Finally the claims only require refining motion vector estimates for a DCT block, they do not provide any limitations on block size, or which blocks are used to provide motion vector estimates. If the applicant wishes to include such limitations they should be included in the claims.

The applicant further argues in regard to step (c)(i) of claim 1 stating that Hu fails to meet the limitations of this step. As stated in the rejection the claim requires step (b) **or** step (c), therefore the art of record need meet only one of these two claims. The examiner believes that Hu in view of Yim meets the limitations of step (b) therefore the claim limitations are met. If the applicant wishes to include the limitations of both steps the 'or' should be changed to 'and'.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2621

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jeremiah C Huber
Examiner
Art Unit 2621

Mehrdad Dastouri
MEHRDAD DASTOURI
SUPERVISORY PATENT EXAMINER
TC 2600